

# MATERIAL SAFETY DATASHEET

## MATERIAL SAFETY DATA SHEET

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION	
<b>IDENTITY</b> Carbon Zinc Cathode Mix – Battery Kit	<b>DATE PREPARED</b> May 2009
<b>SYNONYMS, CHEMICAL NAMES, COMMON NAMES</b> Carbon Zinc Cathode Mix – Battery Kit	<b>CAS REGISTRY NO.</b> Mixture
<b>MANUFACTURER'S NAME</b> Energizer Battery Manufacturing, Inc.	<b>EMERGENCY TELEPHONE NUMBER</b> CHEMTREC: 800-424-9300
<b>ADDRESS</b> 1359 Columbia Rd. Westlake, Ohio 44145	<b>TELEPHONE NUMBER FOR INFORMATION</b> 800-383-7323

SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS			
HAZARDOUS COMPONENTS	OSHA PEL	ACGIH TLV	%/wt.
Manganese Dioxide (CAS# 1313-13-9)	5 mg/m <sup>3</sup> CEILING (as Mn)	0.2 mg/m <sup>3</sup> TWA (as Mn)	50-56 %
Acetylene Black (CAS# 1333-86-4)	3.5 mg/m <sup>3</sup> TWA (as carbon black)	3.5 mg/m <sup>3</sup> TWA (as carbon black)	7-9 %
Zinc Oxide (CAS# 1314-13-2)	5 mg/m <sup>3</sup> TWA (fume) 15 mg/m <sup>3</sup> TWA (total dust) 5 mg/m <sup>3</sup> TWA (respirable fraction)	2 mg/m <sup>3</sup> TWA (respirable fraction) 10 mg/m <sup>3</sup> STEL (respirable fraction)	0.1-0.3 %
Zinc Chloride (CAS# 7646-85-7)	1 mg/m <sup>3</sup> TWA (fume)	1 mg/m <sup>3</sup> TWA (fume) 2 mg/m <sup>3</sup> STEL (fume)	6-9 %
Remaining components, if any, are not hazardous or hazardous components are present at less than 1% (0.1% for carcinogens).			

EMERGENCY OVERVIEW
Black powder with no odor. Oxidizer. May cause irritation to the skin, eyes, and/or respiratory tract. Repeated or prolonged inhalation may cause lung and/or CNS damage.

## SECTION 3 - HAZARDS IDENTIFICATION

### PRIMARY ROUTE(S) OF EXPOSURE:

Inhalation; skin; eyes; ingestion.

### IRRITATION DATA:

Contact may be irritating to the skin and eyes. Inhalation of dusts may be irritating to the upper respiratory tract.

### INHALATION:

**ACUTE:** May cause irritation to the eyes, nose, and lungs. May increase the incidence of upper respiratory infections. Breathing large amounts of dust or fume can result in "metal fume fever", characterized by fever, chills, nausea and vomiting, muscular aches, and weakness. Inhalation of fumes from overheating of polytetrafluoroethylene may cause polymer fume fever. Symptoms of this flu-like illness include fever, chills, and cough and last approximately 24 hours.

**CHRONIC:** Prolonged inhalation of manganese may cause primary inflammatory reaction in the lung, similar to pneumonia, without the presence of pathogenic bacteria. Prolonged overexposure to manganese may impair the central nervous system. Early symptoms include sluggishness, sleepiness, and weakness in the legs. Advanced cases have shown fixed facial expression, emotional disturbance, spastic gait, and falling.

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**SKIN CONTACT:**

ACUTE: May cause irritation with redness and itching.  
CHRONIC: Prolonged exposure may cause dermatitis.

**EYE CONTACT:**

ACUTE: May cause severe irritation or corrosion to eye tissue.  
CHRONIC: May cause conjunctivitis. Components may cause poor pupil reaction to light, retinal damage, and blindness.

**INGESTION:**

ACUTE: May cause irritation, abdominal pain, and nausea. Inorganic manganese salts may produce hypoglycemia and decreased blood calcium levels. Ingested material is slowly and incompletely absorbed into body tissue.  
CHRONIC: Repeated ingestion may cause lethargy and edema.

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE**

Breathing dusts or fumes may aggravate asthma and inflammatory or fibrotic pulmonary disease. Persons with a history of skin, eye, respiratory, or central nervous system disease may be at increased risk from exposure. Iron deficiency may increase susceptibility to manganese poisoning.

**SECTION 4 - EMERGENCY AND FIRST AID PROCEDURES**

**INHALATION:** Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.  
**SKIN CONTACT:** Remove contaminated clothing and shoes. Wash affected area with soap and water until no evidence of the chemical remains. Wash clothing before reuse. Get medical attention if irritation develops.  
**EYE CONTACT:** Flush thoroughly with water for at least 15 minutes, occasionally lifting upper and lower lids, until no evidence of the chemical remains. Get medical attention if irritation develops.  
**INGESTION:** Treat symptomatically and supportively. Get medical attention.

**SECTION 5 - FIRE FIGHTING MEASURES**

FLASH POINT	FLAMMABLE LIMITS	LEL	UEL
Not flammable		Not applicable	Not applicable
<b>AUTOIGNITION TEMPERATURE:</b> Not applicable			
<b>EXTINGUISHING MEDIA</b> Not flammable. However if involved in a fire, use media appropriate for surrounding fire.			
<b>SPECIAL FIRE FIGHTING PROCEDURES</b> Fire fighters should wear full protective NIOSH approved self-contained breathing apparatus.			
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS</b> Moderate fire hazard by chemical reaction. Manganese dioxide is an oxidizer and may contribute to the intensity of the surrounding fire.			

**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

Wear suitable protective equipment. Keep easily oxidizable materials away from spill. Carefully place spilled material into a clean, dry container and cover. Reclaim or place in suitable container for disposal.

**SECTION 7 - HANDLING AND STORAGE**

Wear suitable protective equipment. Avoid breathing dust. Wash thoroughly after handling. Keep containers closed when not in use. Store in a cool, dry place, away from combustibles.

**SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION**

**RESPIRATORY PROTECTION :** Where airborne concentrations may exceed guidelines for permissible air concentrations, choose a respirator in accordance with OSHA Respirator Standard 29 CFR 1910.134.

**VENTILATION:** Use local or general dilution ventilation to maintain exposure below the exposure limits.

**PROTECTIVE GLOVES:** Recommended, but not required. Choose appropriate gloves in accordance with OSHA Subpart 1 Personal Protective Equipment Standard 29 CFR 1910.138.

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**EYE PROTECTION:** Safety glasses with side shields or choose in accordance with OSHA 29 CFR 1910.133.

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:** Appropriate protective clothing to minimize repeated or prolonged skin contact with this substance.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES			
BOILING POINT	Not applicable	SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	3-4
VAPOR DENSITY (Air = 1)	Not applicable	MELTING POINT	Not applicable
VAPOR PRESSURE (mm Hg)	Not applicable	EVAPORATION RATE (Butyl Acetate = 1)	Not applicable
SOLUBILITY IN WATER	35-43%	pH	4.7-6.0
APPEARANCE AND ODOR: Black powder with no odor.			

SECTION 10 - STABILITY AND REACTIVITY			
STABILITY	Unstable		Conditions to Avoid Avoid heating to decomposition (995° F)
	Stable	X	
INCOMPATIBILITY (Materials to Avoid) Organic materials, combustible materials, chlorates, aluminum powder, sulfur, or other oxidizable materials. May be incompatible with acids and bases.			
HAZARDOUS DECOMPOSITION PRODUCTS Thermal decomposition may release toxic and/or hazardous oxides of manganese. Loss of oxygen occurs at 995° F.			
HAZARDOUS POLYMERIZATION	May Occur		Conditions to Avoid Not applicable.
	Will Not Occur	X	

SECTION 11 - TOXICOLOGICAL INFORMATION			
Oral LD <sub>50</sub> (rat): >3478 mg/kg			Manganese Dioxide
Oral LD <sub>50</sub> (rat): >15400 mg/kg			Acetylene black
Dermal LD <sub>50</sub> (rabbit): >3g/kg			Acetylene black
Oral LD <sub>50</sub> (rat): 350 mg/kg			Zinc chloride
Inhalation LC <sub>50</sub> (rat): 1960 mg/m <sup>3</sup> /10M			Zinc Chloride
Reproductive data (RTECS):			Manganese dioxide, Zinc chloride, Zinc oxide
Mutagen data (RTECS):			Acetylene black, Zinc chloride, Zinc oxide
Tumorigenic data (RTECS):			Acetylene black, Zinc chloride
Carcinogenicity: Acetylene black has been classified by IARC as possibly carcinogenic (IARC2B).			

**ADDITIONAL TOXICOLOGY DATA:**

A 1985 study, "Fertility of Male Workers Exposed to Mercury Vapor or to Manganese Dust: A Questionnaire Study," by Robert Lauwerys, MD, MIH, Dsc, Harry Roels, PhD, Pierre Genet, MD, MIH, Guy Toussaint, MD, Andre Boukaert, MD, and Serge DeCooman, MD, suggests that exposure to manganese dust may result in decreased male fertility. This study has not yet been confirmed.

SECTION 12 - ECOLOGICAL INFORMATION
Not available.

SECTION 13 - DISPOSAL CONSIDERATIONS
Dispose in accordance with all applicable federal, state, and local environmental regulations. Recycling or reclamation should be considered. Waste is not regulated by Resource Conservation and Recovery Act (RCRA) as a hazardous waste.

SECTION 14 - TRANSPORT INFORMATION

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**PROPER SHIPPING NAME**

Not regulated

**DOT CLASSIFICATION**

Not applicable

**DOT UN/NA**

Not applicable

**SECTION 15 - REGULATORY INFORMATION**

**OSHA:** This material is classified as hazardous under OSHA regulations.

**TSCA:** All components are listed on the TSCA 8(b) inventory.

**SARA Title III -**

**Toxic Chemicals List 40 CFR 372.65:**

Manganese dioxide

CAS# 1313-13-9

50-56%

Zinc Chloride

CAS# 7646-85-7

6-9%

**Section 311/312 Hazard Categories:**

Acute: Yes

Chronic: Yes

Fire: No

Reactive: No

Sudden Release of Pressure: No

**RCRA Hazardous Waste Codes 40 CFR 261.24, 261.33:**

None.

**SECTION 16 - OTHER INFORMATION**

None.

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